

tracking, and command communication with the space station(s) in question.

(b) The information required by paragraph (a) of this section must be filed electronically in the Commission's International Bureau Filing System (IBFS), in the "Other Filings" tab of the space station's current authorization file. If call sign or location information provided pursuant to paragraph (a) of this section becomes invalid due to a change of circumstances, the space station operator must file updated information in the same manner within 30 days, except with respect to changes less than 30 days in duration, for which no update is necessary.

[79 FR 8321, Feb. 12, 2014]

**§ 25.173 Results of in-orbit testing.**

(a) Space station operators must measure the co-polarized and cross-polarized performance of space station antennas through in-orbit testing and submit the measurement data to the Commission upon request.

(b) Within 15 days after completing in-orbit testing of a space station licensed under this part, the operator must notify the Commission that such testing has been completed and certify that the space station's measured performance is consistent with the station authorization and that the space station is capable of using its assigned frequencies or inform the Commission of any discrepancy. The licensee must also indicate in the filing whether the space station has been placed in the assigned geostationary orbital location or non-geostationary orbit. If the licensee files a certification pursuant to this paragraph before the space station has been placed in its assigned orbit or orbital location, the licensee must separately notify the Commission that the space station has been placed in such orbit or orbital location within 3 days after such placement and that the station's measured performance is consistent with the station authorization.

[79 FR 8321, Feb. 12, 2014]

**Subpart C—Technical Standards**

SOURCE: 30 FR 7176, May 28, 1965; 36 FR 2562, Feb. 6, 1971, unless otherwise noted.

**§ 25.201 [Reserved]**

**§ 25.202 Frequencies, frequency tolerance, and emission limits.**

(a)(1) *Frequency band.* The following frequencies are available for use by the Fixed-Satellite Service. Precise frequencies and bandwidths of emission shall be assigned on a case-by-case basis. Refer to the U.S. Table of Frequency Allocations, 47 CFR 2.106, including relevant footnotes, for band-specific use restrictions and coordination requirements. Restrictions and coordination conditions not mentioned in the Table of Frequency Allocations are set forth in the annotations to the following list:

Space-to-earth (GHz)	Earth-to-space (GHz)
3.6–3.65 .....	5.091–5.25
3.65–3.7 .....	5.85–5.925
3.7–4.2 .....	5.925–6.425
4.5–4.8 .....	6.425–6.525
6.7–7.025 .....	6.525–6.7
7.025–7.075 .....	6.7–7.025
10.7–11.7 .....	7.025–7.075
11.7–12.2 .....	12.7–12.75
12.2–12.7 .....	12.75–13.25
18.3–18.58 <sup>1,2</sup> .....	13.75–14
18.58–18.8 .....	14–14.2
18.8–19.3 .....	14.2–14.5
19.3–19.7 .....	15.43–15.63
19.7–20.2 .....	17.3–17.8
37.5–40 <sup>3</sup> .....	24.75–25.05
40–42 .....	25.05–25.25
	<sup>2</sup> 27.5–28.35
	<sup>4</sup> 28.35–28.6
	<sup>5</sup> 28.6–29.1
	<sup>6</sup> 29.1–29.25
	<sup>7</sup> 29.25–29.5
	<sup>4</sup> 29.5–30.0
	47.2–50.2

<sup>1</sup>The 18.3–18.58 GHz band is shared co-equally with existing terrestrial radiocommunication systems until November 19, 2012.

<sup>2</sup>FSS is secondary to LMDS in this band.

<sup>3</sup>Use of this band by the Fixed-Satellite Service is limited to gateway earth station operations, provided the licensee under this part obtains a license under part 101 of this chapter or an agreement from a part 101 licensee for the area in which an earth station is to be located. Satellite earth station facilities in this band may not be ubiquitously deployed and may not be used to serve individual consumers.

<sup>4</sup>This band is primary for GSO FSS and secondary for NGSO FSS.

<sup>5</sup>This band is primary for NGSO FSS and secondary for GSO FSS.

<sup>6</sup>This band is primary for MSS feeder links and LMDS hub-to-subscriber transmission.

<sup>7</sup>This band is primary for MSS feeder links and GSO FSS.

(2) [Reserved]

(3) The following frequencies are available for use by the non-voice, non-geostationary mobile-satellite service:

- 137–138 MHz: Space-to-Earth
- 148–150.05 MHz: Earth-to-space
- 399.9–400.05 MHz: Earth-to-space
- 400.15–401 MHz: Space-to-Earth

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(4)(i) The following frequencies are available for use by the 1.6/2.4 GHz Mobile-Satellite Service:

- 1610–1626.5 MHz: User-to-Satellite Link
- 1613.8–1626.5 MHz: Satellite-to-User Link (secondary)
- 2483.5–2500 MHz: Satellite-to-User Link

(ii) The following frequencies are available for use by the 2 GHz Mobile-Satellite Service: 2000–2020 MHz: User-to-Satellite Link; 2180–2200 MHz: Satellite-to-User Link.

(iii)(A) The following frequencies are available for use by the 1.5/1.6 GHz Mobile-Satellite Service:

- 1525–1559 MHz: space-to-Earth
- 1626.5–1660.5 MHz: Earth-to-space

(B) The use of the frequencies 1544–1545 MHz and 1645.5–1646.5 MHz is limited to distress and safety communications.

(5) The following frequencies are available for use by the inter-satellite service:

- 22.55–23.00 GHz
- 23.00–23.55 GHz
- 24.45–24.65 GHz
- 24.65–24.75 GHz
- 54.25–56.90 GHz
- 57.00–58.20 GHz
- 65.00–71.00 GHz

(6) The following frequencies are available for use by the Satellite Digital Audio Radio Service (SDARS), and for any associated terrestrial repeaters: 2320–2345 MHz (space-to-Earth)

(7) The following frequencies are available for use by the Direct Broadcast Satellite service:

- 12.2–12.7 GHz: Space-to-Earth.
- 12.2–12.7 GHz: Space-to-Earth.

(8) The following frequencies are available for use by ESVs:

- 3700–4200 MHz (space-to-Earth)
- 5925–6425 MHz (Earth-to-space)
- 10.95–11.2 GHz (space-to-Earth)
- 11.45–11.7 GHz (space-to-Earth)
- 11.7–12.2 GHz (space-to-Earth)
- 14.0–14.5 GHz (Earth-to-space)

ESVs shall be authorized and coordinated as set forth in §§ 25.221 and 25.222. ESV operators, collectively, may coordinate up to 180 megahertz of spectrum in the 5925–6425 MHz (Earth-to-space) band for all ESV operations at any given location subject to coordination.

(9) The following frequencies are available for use by the Broadcasting-Satellite Service after 1 April 2007:

- 17.3–17.7 GHz (space-to-Earth)
- 17.7–17.8 GHz (space-to-Earth)

NOTE 1 TO PARAGRAPH (a)(9): Use of the 17.3–17.7 GHz band by the broadcasting-satellite service is limited to geostationary satellite orbit systems.

NOTE 2 TO PARAGRAPH (a)(9): Use of the 17.7–17.8 GHz band (space-to-Earth) by the broadcasting-satellite service is limited to transmissions from geostationary satellite orbit systems to receiving earth stations located outside of the United States and its Possessions. In the United States and its Possessions, the 17.7–17.8 GHz band is allocated on a primary basis to the Fixed Service.

(10)(i) The following frequencies are available for use by Vehicle-Mounted Earth Stations (VMESs):

- 10.95–11.2GHz (space-to-Earth)
- 11.45–11.7GHz (space-to-Earth)
- 11.7–12.2GHz (space-to-Earth)
- 14.0–14.5GHz (Earth-to-space)

(ii) VMESs shall be authorized as set forth in § 25.226.

(11)(i) The following frequencies are available for use by Earth Stations Aboard Aircraft (ESAA):

- 10.95–11.2 GHz (space-to-Earth)
- 11.45–11.7 GHz (space-to-Earth)
- 11.7–12.2 GHz (space-to-Earth)
- 14.0–14.5 GHz (Earth-to-space)

(ii) ESAAs shall be authorized as set forth in § 25.227.

(b) Other frequencies and associated bandwidths of emission may be assigned on a case-by-case basis to space systems under this part in conformance with § 2.106 of this chapter and the Commission’s rules and policies.

(c) [Reserved]

(d) *Frequency tolerance, Earth stations.* The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001 percent of the reference frequency.

(e) *Frequency tolerance, space stations.* The carrier frequency of each space station transmitter authorized in these services shall be maintained within 0.002 percent of the reference frequency.

(f) *Emission limitations.* Except for SDARS terrestrial repeaters, the mean power of emissions shall be attenuated below the mean output power of the

transmitter in accordance with the schedule set forth in paragraphs (f)(1) through (f)(4) of this section. The out-of-band emissions of SDARS terrestrial repeaters shall be attenuated in accordance with the schedule set forth in paragraph (h) of this section.

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;

(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

(g) Telemetry, tracking and command functions must be conducted at either or both edges of the allocated band(s). Frequencies, polarization and coding shall be selected to minimize interference into other satellite networks and within their own satellite system.

(h) *Out-of-band emission limitations for SDARS terrestrial repeaters.* (1) Any SDARS terrestrial repeater operating at a power level greater than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power  $P$  by a factor of not less than  $90 + 10 \log (P)$  dB in a 1-megahertz bandwidth outside the 2320–2345 MHz band, where  $P$  is average transmitter output power in watts.

(2) Any SDARS terrestrial repeater operating at a power level equal to or less than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power  $P$  by a factor of not less than  $75 + 10 \log (P)$  dB in a 1-megahertz bandwidth outside the 2320–2345 MHz band, where  $P$  is

average transmitter output power in watts.

(3) SDARS repeaters are permitted to attenuate out-of-band emissions less than the levels specified in paragraphs (h)(1) and (h)(2), of this section unless a potentially affected WCS licensee provides written notice that it intends to commence commercial service within the following 365 days. Starting 180 days after receipt of such written notice, SDARS repeaters within the area notified by the potentially affected WCS licensee must attenuate out-of-band emissions to the levels specified in paragraphs (h)(1) and (h)(2) of this section.

(4) For the purpose of this section, a WCS licensee is potentially affected if it is authorized to operate a base station in the 2305–2315 MHz or 2350–2360 MHz bands within 25 kilometers of a repeater seeking to operate with an out of band emission attenuation factor less than those prescribed in paragraphs (h)(1) or (2) of this section.

(i) The WCS licensee is authorized to operate a base station in the 2305–2315 MHz or 2350–2360 MHz bands in the same Major Economic Area (MEA) as that in which a SDARS terrestrial repeater is located.

(ii) The WCS licensee is authorized to operate a base station in the 2315–2320 MHz or 2345–2350 MHz bands in the same Regional Economic Area Grouping (REAG) as that in which a SDARS terrestrial repeater is located.

(iii) A SDARS terrestrial repeater is located within 5 kilometers of the boundary of an MEA or REAG in which the WCS licensee is authorized to operate a WCS base station.

[30 FR 7176, May 28, 1965]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 25.202, see the List of CFR Sections Affected, which appears in the Finding Aids section of the printed volume and at [www.fdsys.gov](http://www.fdsys.gov).

#### § 25.203 Choice of sites and frequencies.

(a) Sites and frequencies for earth stations, other than ESVs, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected, to the extent practicable, in areas where the